

## CLAIMS

1. A tape drive applicable to either of a thin-type and a thick-type tape cartridges having different case thicknesses respectively in common therewith, wherein

5       said tape drive comprises a loading frame for receiving and supporting said tape cartridge loaded through a loading mouth and a holder for pressing and holding said tape cartridge in cooperation with said loading frame,

10       said loading frame comprises a bottom wall for supporting a lower surface of said tape cartridge and side walls projected from left and right ends of said bottom wall to restrain swinging of said tape cartridge in the left and right directions,

15       said holder is vertically movable between an upper position in contact with an upper surface of said thick-type cartridge so as to press and hold said thick-type tape cartridge and a lower position in contact with an upper surface of said thin-type tape cartridge so as to press and hold said thin-type tape cartridge and is normally  
20       positioned at said upper position,

25       a pair of upper and lower sensors provided at said side wall of the loading frame for identifying the thin-type and the thick-type tape cartridges, an effective point of the lower sensor being located below a reference height defined by the upper surface of said thin-type tape cartridge, and an effective point of the upper sensor being located above said reference height, whereby when only said lower sensor is turned ON by the tape cartridges loaded through said loading mouth, said holder is displaced  
30       from the upper position to the lower position so as to press

and hold said thin-type tape cartridge for making the cartridge vertically immovable.

2. A tape drive as set forth in claim 1, wherein said cartridge has a tape loading pocket disposed in a front portion of a main body case so as to be opened and closed by a shutter which is slidable in the fore and rear directions along the case lower surface and a front lid which is swingably supported by the main body case,

a stroke distance of a pin for opening said front lid by pushing up said front lid is controlled long or short in accordance with said loaded tape cartridges based on output signals corresponding to sizes of the tape cartridges detected by said sensors.

3. A tape drive as set forth in claim 1 or 2, wherein said side wall has an entrance and an exit for a tape end detection light opened respectively,

said tape drive has a tape end detection section provided with a light emitting element for radiating a detection light and a light receiving element for receiving the detection light disposed correspondingly to said entrance and said exit respectively,

said tape end detection section is constructed so as to be displaced to a suitable height for said loaded tape cartridge based on the output signals corresponding to the sizes of the tape cartridges detected by said sensors.

4. A tape drive applicable to either of a thin-type and a thick-type tape cartridges having different case thicknesses respectively in common therewith, wherein

said tape drive comprises a loading frame for receiving and supporting said tape cartridge loaded through a loading

mouth and a holder for pressing and holding said tape cartridge in cooperation with said loading frame,

5       said loading frame has projections adapted to engage with grooves formed in bottom surfaces of said tape cartridges for judging the upper sides and the lower sides of said tape cartridges, and a shelter for changing over an opening height of the loading mouth between a fully opened position and a controlled position,

10       an operation panel of said tape drive is provided with a selecting switch for selecting the tape cartridge size, so that an opening height of said loading mouth and a height of said holder can be adjusted so as to match with the tape cartridge to be new loaded by vertically actuating said shelter and said holder based on an output signal  
15       corresponding to the size of the tape cartridge selected by said selecting switch.

5. A tape drive as set forth in claim 4, wherein a shutter for opening and closing drive shaft insertion holes and the loading pocket from below on the side of the main body  
20       case is provided in a bottom surface of said tape cartridge, guide grooves adapted to be slide guided by lock releasing pieces on the tape drive side are formed in the lower surface of said shutter, and

25       said guide grooves serve also as the above-mentioned grooves, and said lock releasing pieces serve also as the above-mentioned projections.

6. A tape drive as set forth in claim 4 or 5, wherein said shutter is provided with a sensor for sensing a case thickness of said tape cartridge.

30       7. A tape drive applicable to either of a thin-type and a

thick-type tape cartridges having different case thicknesses respectively in common therewith, wherein

5 said tape drive accommodates within it a loading frame for receiving and supporting said tape cartridge loaded through a loading mouth, a pressing and holder for holding said tape cartridge in cooperation with said loading frame,

10 said tape cartridge loading mouth is opened so as to face the loading frame provided within the tape drive, while a first door and a second door are adjacently disposed on the outside and on the inside within said loading mouth, said first door and said second door being swingably supported between a shielding position for shielding said loading mouth and a retreat position to which they are swung inward interlockingly with the loading of said tape  
15 cartridge respectively as well as urged toward said shielding positions,

a vertical space between the lower edge of said first door and an opening lower edge of said loading mouth is set larger than a vertical thickness of said thin-type tape  
20 cartridge and smaller than a vertical thickness of said thick-type tape cartridge, while a vertical space between the lower edge of said second door and an opening lower edge of said loading mouth is set smaller than a vertical thickness of said thin-type tape cartridge,

25 and a first sensor and a second sensor sense the retreat swings of both said doors, while output signal is used for judging a size of said tape cartridge loaded onto said loading frame.

30 8. A tape drive as set forth in claim 7, wherein both said first sensor and the second sensor are constructed by

switches adapted to be turned ON interlockingly with the retreat swings of both said doors, and

both said doors are provided with actuator cams for switching both said sensors.

5        9. A tape drive as set forth in claim 7 or 8, wherein said tape cartridge is fixedly held in a use posture by lowering said holder based on the output signals from both said first and the second sensors.

10       10. A tape drive as set forth in claim 7, 8 or 9, wherein said opening of said loading mouth is shielded by said second door in a unused state.

11. A tape drive applicable to a thin-type and a thick-type tape cartridges having different case thicknesses respectively in common therewith, wherein

15       said thin-type and said thick-type record cartridges comprises a tape loading pocket arranged in a middle portion of a main body case on its front face side and provided with its lower surface and its front surface to be opened, a shutter slidable in the fore and rear directions  
20       along an outer lower surface of said main body case for opening and closing the lower surface of the pocket, and a front lid swingably supported by said main body case for opening and closing the front surface of the pocket,

25       said front lid comprises a front face plate for covering the front opening of said pocket between its left and right ends and connection pieces integrally connected to said front face plate so as to extend rearward in the case from left and right ends thereof,

30       said front lid is pivotally supported so as to be opened upward about supporting shafts projected inward oppositely

to each other from the inside surfaces of said connection pieces between a closed posture for closing said pocket and an opened posture for opening the front surface of said pocket by its raising position above the upper surface of said pocket,

said front face plate of said thick-type tape cartridge comprises a main face wall laterally elongated in the left and right directions so as to form most of the front face plate, and assistant side face walls pivotally connected to the main face wall through connection shafts projected oppositely to each other from the inside surfaces of the connection pieces,

said assistant side face walls are pivotally supported about the connection shafts between an aligned posture in which they are aligned in a coplanar state with an outer surface of said main face wall and a bent posture in which they are bent downward substantially perpendicularly to said main face wall while they are resiliently urged toward said bent posture by coil springs mounted to said connection shafts, and

when the front lid takes said closed posture, said assistant side face walls take the aligned posture in which their outer surfaces are aligned in the coplanar state with the outer surface of said main face wall as well as when front lid pivots from said closed posture to said opened posture, said assistant side face walls shift to said bent posture.

12. A tape drive as set forth in claim 11, wherein vertical width dimensions of said main face wall and said assistant side face wall are set so that a projecting

distance ( $W_b$ ) of the pivoting front lid of the thick-type tape cartridge defined by a circular movement trace scribed by said main face wall pivoting about the supporting shafts interlockingly with the opening and closing of the front lid and an outer surface of the front face plate in the closed posture takes approximately the same value with respect to a projecting distance ( $W_a$ ) defined by a movement trace scribed by the pivoting front lid of the thin-type tape cartridge and an outer surface of the front face plate in the closed posture.

13. A tape drive applicable to a thin-type and a thick-type tape cartridges having different vertical thicknesses respectively in common therewith, wherein

said thin-type and said thick-type tape cartridges comprise the tape loading pocket arranged in a middle portion of the main body case on its front face side and provided with its lower surface and its front surface to be opened, a shutter slidable in the fore and rear directions along the outer lower surface of the main body case for opening and closing the lower surface of said pocket, and the front lid swingably supported by the main body case for opening and closing the front surface of said pocket,

said front lid comprises a front face plate for covering the front opening of said pocket between its left and right ends, and the connection pieces integrally connected to said front face plate so as to extend rearward in the case from left and right ends thereof,

said front lid is pivotally supported so as to be opened upward about supporting shafts projected inward oppositely to each other from the inside surfaces of said connection

pieces between a closed posture for closing said pocket and an opened posture for opening the front surface of said pocket by its raising position above the upper surface of said pocket, and

5 arrangement positions of said supporting shafts of said thick-type tape cartridge are adjusted so that projecting distances ( $W_e$ ,  $W_f$ ) of said pivoting front lid of said thick-type tape cartridge defined by a circular movement trace scribed by said front lid pivoting about the supporting  
10 shafts and an outer surface of said front lid in the closed posture take approximately the same value with respect to a projecting distance ( $W_d$ ) defined by a movement trace scribed by said pivoting front lid of said thin-type tape cartridge and an outer surface of said front lid in said  
15 closed posture.

14. A tape drive as set forth in claim 13, wherein said arrangement positions of the supporting shafts of said thick-type tape cartridge defined by a distance ( $D_8$ )  
between the outer surface of said front lid in said closed  
20 posture and the supporting shafts in the fore and rear direction and a distance ( $D_4$ ) between the lower surface of said main body case and said supporting shafts in the vertical direction is the same as the arrangement positions of said supporting shafts of said thin-type tape cartridge  
25 defined by a distance ( $D_7$ ) between the outer surface of said front lid in said closed posture and the supporting shafts in the fore and rear direction, and a distance ( $D_3$ ) between the lower surface of said main body case and said supporting shafts in the vertical direction, and thus the  
30 setting is made so that the movement traces scribed by said



front lids pivoting about said supporting shafts of these thin-type and the thick-type tape cartridges become the same as each other.

5 15. A tape drive as set forth in claim 14, wherein a relief recessed portion for allowing an opening movement of said front lid is formed in an included angle portion between the upper end surface and the front end surface of said thick-type tape cartridge like a stepped notch.

10 16. A tape drive as set forth in any one of claims 11 to 15, wherein said main body case is formed by a lower case and an upper case coupled to each other like a socket-and-spigot lid engagement,

15 in said thin-type and said thick-type tape cartridges, said lower case has the same thickness dimension in both the cartridges so as to be used in common,

while said upper cases have different thickness dimensions in the thin-type and the thick-type tape cartridges respectively.